AMENDMENTS TO THE CLAIMS

This listing of claim will replace all prior versions and listings of claim in the application.

1. - 48. (Cancelled)

49. (previously presented) An ultrasonic monitor for measuring pulse rate values in a living subject, comprising:

a) at least one source of ultrasonic energy;

b) a gel pad comprised of a thermoplastic elastomer and from about 50 to about 95 % by weight of an ultrasound conductive diluent, said gel pad is positioned to be directly between the energy source and the living subject, said gel pad is characterized by having needle penetration from about 5 to about 300 (1/10 mm) according to ASTM D15;

c) an ultrasonic energy detector; and

d) associated hardware and software for detecting, calculating and displaying a readout of the measured rate values.

50. (previously presented) The ultrasonic monitor of claim 49, wherein:
said gel pad is characterized by having needle penetration from about 25 to about 300.

51. (previously presented) The ultrasonic monitor of claim 49, wherein:
said gel pad is characterized by having needle penetration from about 30 to about 150.

52. (previously presented) The ultrasonic monitor of claim 49, wherein:
said thermoplastic elastomer is a styrene-butadiene-styrene block copolymer.

53. (previously presented) The ultrasonic monitor of claim 49, wherein:
said thermoplastic elastomer is a styrene-isoprene-styrene block copolymer.

54. (previously presented) The ultrasonic monitor of claim 49, wherein:
said thermoplastic elastomer is a styrene/ethylene-co-butylene/styrene block copolymer.

55. (previously presented) The ultrasonic monitor of claim 49, wherein:
said thermoplastic elastomer is a styrene/ethylene-co-propylene/styrene block copolymer.

56. (previously presented) The ultrasonic monitor of claim 49, wherein:
said thermoplastic elastomer is an ethylene/ethylene-co-butylene/ethylene block copolymer.

57. (previously presented) The ultrasonic monitor of claim 49, wherein:
said ultrasound conducting diluent is selected from the group consisting of dibutyl phthalate, dioctyl phthalate, mineral oils, naphthenic oils, paraffinic oils, polybutenes, and vegetable oils.

58. (previously presented) The ultrasonic monitor of claim 49, wherein:
said at least one source of ultrasonic energy, said gel pad, said ultrasonic energy detector and said associated hardware are part of a wristwatch assembly.

59. (previously presented) The ultrasonic monitor of claim 49, wherein:
the source of ultrasonic energy and the ultrasonic energy detector are located within a first module and communicate by wireless transmission with the hardware for displaying a readout of the measured rate values.

60. (previously presented) The ultrasonic monitor of claim 59, wherein:
said first module is part of a wristwatch.

61. (previously presented) The ultrasonic monitor of claim 59, wherein:
the hardware for displaying a readout of the measured rate values is housed in a second

module.

62. (previously presented) The ultrasonic monitor of claim 61, wherein:
the second module is part of a wristwatch.

63. (previously presented) The ultrasonic monitor of claim 49, wherein:
the source of ultrasonic energy and the ultrasonic energy detector are located within a first module and are hardwired to the hardware for displaying a readout of the measured rate.

64. (previously presented) The ultrasonic monitor of claim 63, wherein:
said first module is part of a wristwatch.

65. (previously presented) An ultrasonic monitor of claim 49, wherein:
the source of ultrasonic energy and the ultrasonic energy detector are held in place by a head band.

66. (previously presented) The ultrasonic monitor of claim 49, wherein:
the source of ultrasonic energy and the ultrasonic energy detector comprises first and second piezoelectric crystals positioned at an angle to each other, the angle determined based on the distance of the source of ultrasonic energy to a target.

67. (previously presented) The ultrasonic monitor of claim 66, wherein:
the first piezoelectric crystal is energized by an original ultrasound frequency signal;
the original ultrasound frequency signal is reflected off said target and received by the second piezoelectric crystal; and
the received ultrasound frequency signal is higher or lower than said original ultrasound frequency signal depending on direction and speed of fluid flow.

68. (previously presented) The ultrasonic monitor of claim 67, wherein:

the original ultrasonic frequency signal has a frequency of 2 MHz or lower.

69. (previously presented) The ultrasonic monitor of claim 67, wherein:

the first and second piezoelectric crystals are positioned in a wristwatch proximate to a radial artery of a subject.

70. (previously presented) The ultrasonic monitor of claim 67, wherein:

the first and second piezoelectric crystals are positioned proximate to an ulnar artery of a subject.

71. (previously presented) The ultrasonic monitor of claim 67, wherein:

the first and second piezoelectric crystals are inclined at a roof angle relative to each other of between about 0 and 60°.

72. (previously presented) The ultrasonic monitor of claim 67, wherein:

the first and second piezoelectric crystals are inclined at a roof angle relative to each other of between about 5 and 45°.

73. (previously presented) The ultrasonic monitor of claim 67, wherein:

the first and second piezoelectric crystals are separated by a distance of between about 0.5 and 20 mm.

74. (previously presented) The ultrasonic monitor of claim 67, wherein:

the first and second piezoelectric crystals are separated by a distance of between about 1.0 and 10 mm.

75. (previously presented) The ultrasonic monitor of claim 49, wherein:

the source of ultrasonic energy and the ultrasonic energy detector are positioned within a module that is inclined relative to a target.

76. (previously presented) The ultrasonic monitor of claim 75, wherein:
an inclination of the module results from an angular shape of the gel pad.

77. (previously presented) The ultrasonic monitor of claim 76, wherein:
the gel pad has a trapezoidal cross-sectional shape.

78. (previously presented) The ultrasonic monitor of claim 76, wherein:
the gel pad has a triangular cross-sectional shape.

79. (previously presented) The ultrasonic monitor of claim 49, wherein:
the hardware comprises a demodulator configured to convert a Doppler shift of a reflected ultrasound energy into a voltage.

80. (previously presented) The ultrasonic monitor of claim 79, wherein:
the demodulator comprises an FM demodulator.

81. (previously presented) The ultrasonic monitor of claim 79, wherein:
the demodulator comprises an AM demodulator.

82. (previously presented) The ultrasonic monitor of claim 79, wherein:
the demodulator comprises an RF mixer or a Gilbert cell.

83. (previously presented) A method for detecting pulse rates in a living subject, comprising:
providing an ultrasonic monitor, said ultrasonic monitor comprises:

a) at least one source of ultrasonic energy,

b) a gel pad comprised of a thermoplastic elastomer and from about 50 to about 95 % by weight of an ultrasound conductive diluent, wherein said gel pad is characterized by having needle penetration from about 5 to about 300 (1/10 mm) according to ASTM D15; wherein said gel pad is positioned directly between the energy source and the living subject,

c) an ultrasonic energy detector, and

d) associated hardware and software for detecting, calculating and displaying a readout of the measured rate values; and

contacting said ultrasonic monitor with the living subject at the point where the pulse is to be measured.

84. (previously presented) The method of claim 83, wherein:

said living subject is a human.

85. (previously presented) A method of claim 83, wherein:

said contacting includes contacting said ultrasonic monitor to the subject on the radial or ulnar artery.

86. (previously presented) A method of claim 83, wherein:

said pulse rates are selected from the group consisting of heart rate values, blood flow rate values, fetal heart rate values, and fetal blood flow rate values.

87. (previously presented) The method of claim 83, wherein:

the source of ultrasonic energy and the ultrasonic energy detector are provided in a module, separated by a distance of between about 0.5 and 20 mm and inclined relative to one another at a roof angle of between about 0 and 60°.

88. (previously presented) The method of claim 87, wherein:

the module is inclined by resting on an angular shape of the gel pad.

89. (Currently Amended) An ultrasonic monitor for measuring pulse rate values in a living subject, comprising:

a) at least one source of ultrasonic energy located in a module, the source emitting ultrasonic energy of an operating frequency of 2 MHz or lower;

b) an ultrasonic energy detector positioned in the module at a roof angle relative to the source of ultrasonic energy;

c) a gel pad displaced between the at least one source of ultrasonic energy and the ultrasonic energy detector and the living subject; and

~~c)~~ d) associated hardware and software for detecting, calculating and displaying a readout of the measured rate values, wherein the ultrasonic monitor is worn on the wrist of the living subject being monitored.

90. (previously presented) The ultrasonic monitor of claim 89 wherein:

said source of ultrasonic energy comprises a first piezoelectric crystal;

said detector comprises a second piezoelectric crystal; and

the roof angle is determined based on the distance of said energy source to the living subject.

91. (previously presented) The ultrasonic monitor of claim 89, wherein:

the first piezoelectric crystal is energized by an original ultrasound frequency signal;

the original ultrasound frequency signal is reflected off the living subject and received by the second piezoelectric crystal; and

the received ultrasound frequency signal is higher or lower than the original ultrasound frequency signal depending on direction and speed of fluid flow.

92. (previously presented) The ultrasonic monitor of claim 89, wherein:

the first and second piezoelectric crystals are positioned in an wristwatch proximate to a

radial artery or an ulnar artery of the subject.

93. (previously presented) The ultrasonic monitor of claim 89, wherein:

the first and second piezoelectric crystals are inclined at a roof angle relative to each other of between about 0 and 60°.

94. (previously presented) The ultrasonic monitor of claim 89, wherein:

the first and second piezoelectric crystals are inclined at a roof angle relative to each other of between about 5 and 45°.

95. (previously presented) The ultrasonic monitor of claim 89, wherein:

the first and second piezoelectric crystals are positioned within a module and separated by a distance of between about 0.5 and 20 mm.

96. (previously presented) The ultrasonic monitor of claim 89, wherein:

the first and second piezoelectric crystals are separated by a distance of between about 1.0 and 10 mm.

97. (previously presented) The ultrasonic monitor of claim 89, wherein:

the first and second piezoelectric crystals are inclined at a roof angle relative to each other of between about 0 and 60°;

the first and second piezoelectric crystals are positioned within a module and separated by a distance of between about 0.5 and 20 mm; and

the first and second piezoelectric crystals are positioned from an artery of the subject by a distance of between about 3-10 mm.

98. (Currently Amended) A method for detecting pulse rates in a living subject, comprising:

providing an ultrasonic monitor, the ultrasonic monitor comprises at least one source of ultrasonic energy having an operating frequency of 2 MHz or lower, an ultrasonic energy detector, a gel pad and associated hardware and software for detecting, calculating and displaying a readout of the measured rate values; and

contacting said monitor with the subject on the wrist of the living subject at the point where the pulse is to be measured.

99. (previously presented) The method of claim 98, wherein:

the living subject is a human; and

the ultrasonic monitor contacts the subject on the radial or ulnar artery.

100~~101~~. (Currently Amended) The method of claim 98,wherein:

the source of ultrasonic energy and the ultrasonic energy detector are separated by a distance of between about 0.5 and 20 mm;

the source of ultrasonic energy and the ultrasonic energy detector inclined relative to one another at a roof angle of between about 0 and 60°; and

the source of ultrasonic energy and the ultrasonic energy detector are positioned from an artery of the subject by a distance of between about 3-10 mm.

101~~102~~. (Currently Amended) An ultrasonic monitor for measuring pulse rates in a living subject, comprising:

a) a source of ultrasonic energy having an operating frequency of 2 MHz or lower, the source of ultrasonic energy transmits ultrasonic energy toward a target blood vessel in the living subject;

b) an ultrasonic energy detector, the ultrasonic energy detector receives ultrasonic energy from the target blood vessel, the source of ultrasonic energy and the ultrasonic energy detector are in an angular orientation with respect to a direction of movement in said target blood vessel measured as a bias angle;

c) a gel pad displaced between the source of ultrasonic energy and the ultrasonic energy detector and the living subject; and

~~c)~~ d) associated hardware and software for detecting, calculating and displaying a readout of the measured rate values, wherein the ultrasonic monitor is worn on the wrist of the living subject being monitored.

102~~103~~. (Currently Amended) An ultrasonic monitor according to claim 102, wherein:
the bias angle is less than 90°.

103~~104~~. (Currently Amended) The ultrasonic monitor according to claim 103, wherein:

said source of ultrasonic energy comprises a first piezoelectric crystal; and
said detector comprises a second piezoelectric crystal.

104~~105~~. (Currently Amended) The ultrasonic monitor according to claim 103, wherein:

the source of ultrasonic energy and the ultrasonic energy detector are separated by a distance of between about 0.5 and 20 mm;

the source of ultrasonic energy and the ultrasonic energy detector inclined relative to one another at a roof angle of between about 0 and 60°; and

the source of ultrasonic energy and the ultrasonic energy detector are positioned from said target blood vessel by a distance of between about 3-10 mm.